

Flight Scientist Report
Saturday 02/15/2020 ACTIVATE RF02

Flight Type: Statistical Survey Flight - Clouds

Flight Route: NORTN-OXANA-LSIER (avoid icing to north; directly east is the worst for icing and not ideal heading for RSP)

Special Notes: NA

King Air

3.3 hrs

- Difficulty in getting the holding loop; easier to get when under radar coverage. Outside of that, have to relay requests to ATC
- Turned around early, but did not have to request that. Turned on our own regard
- King Air handled communications with ATC again. Will tentatively have to be the protocol going forward. Otherwise, will have to waste time to go high to be able to communicate to ATC.
 - Current decision is cannot do a Falcon flight unless King Air also flies to handle ATC communication

Instruments:

AVAPS: Good; fixed issues with clock/time zone

RSP: Good; Taylor took care of it today

HSRL: Ran well except 355 interferometer; contrast ratios low

Falcon

3.2 hrs

- Delayed takeoff to burn fuel to get down to legal weight
- Got a block quickly
- 4 full ensembles
- Clouds scattered in places
 - Had to extend several times to get samples (e.g., above cloud bases ~3-4 times). Did make adjustments based on the breaks in clouds.
- Ensemble 1: BCB ~3300 ft, scattered CU tops ~4500 ft; ACB 3800 ft
- Mixed-Phase precip on 2DS cloud probe
- ~17:42 - descending to do Ensemble 2
- ~17:55 - 2nd ACB leg, 4400 (aircraft altimeter) clouds have become more cumulus like in the last 10 mins, it also feels more choppy
- ~19:14 - did MINALT out of sequence because of precip making it hard to determine CB and we wanted to get min alt in before we got too close to land; did BCB; ACB 2 skipped because of ATC reqs
- Ensemble 4 was nearly completed, only BCT was missed but there was no cloud; then dealt with ATC issues but managed at least at the end to get legs at 3k ft and then 2k ft for 3 mins a piece for PBL characterization
- Good transitions during flight between different cloud types
- Attempted different power swap method
 - Lost payload power again
 - Payload systems on UPS remained powered; all else lost power
- Good flight science wise

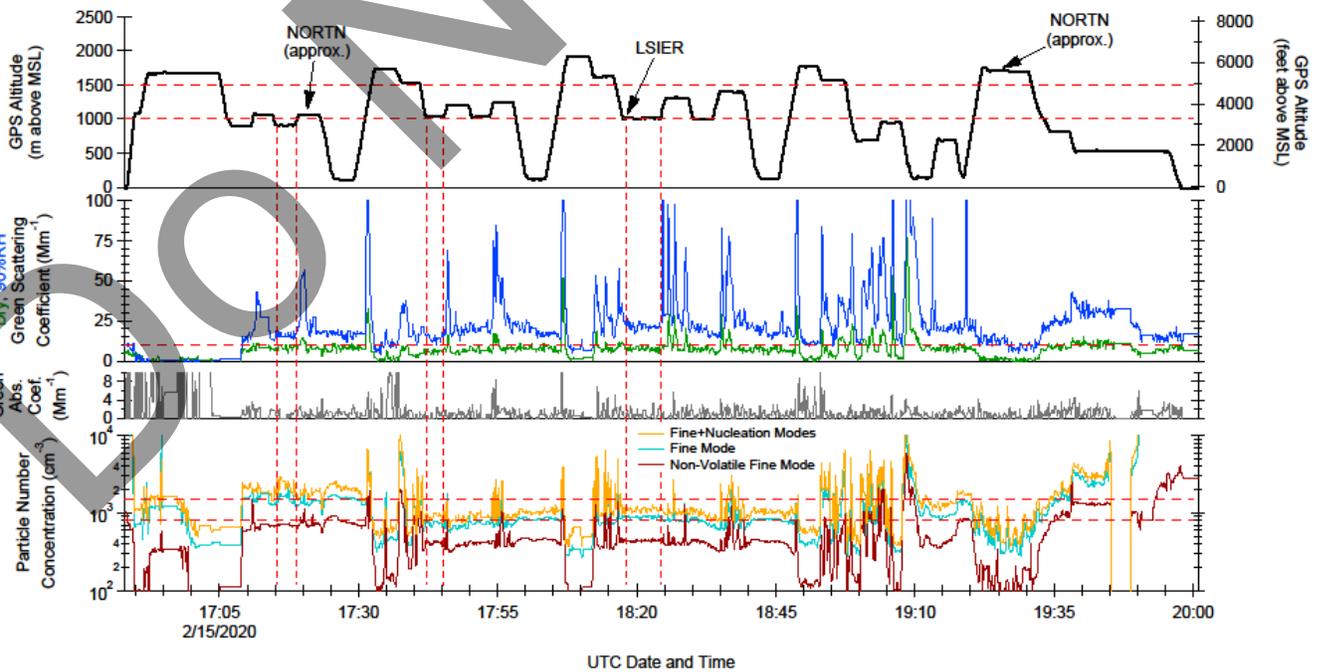
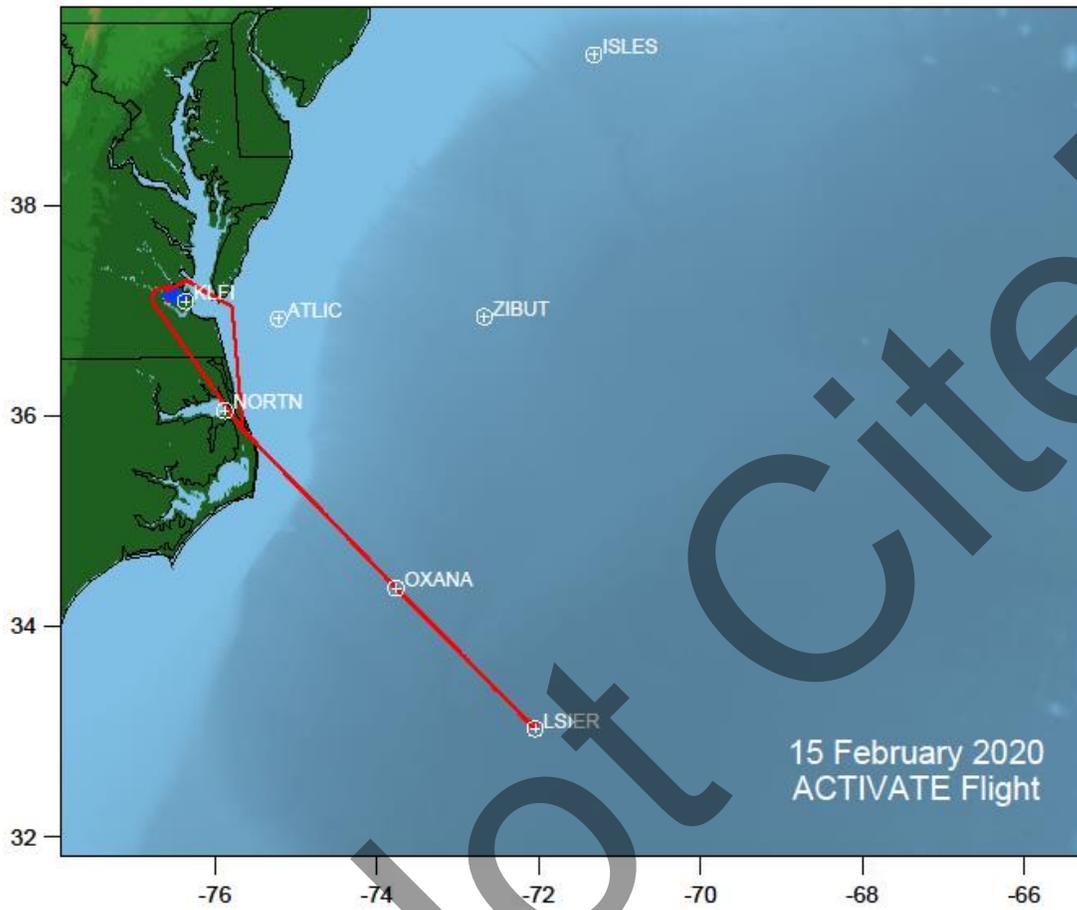
- Power swap: need about 5 min call for DC power swap. Get APU started, get engines started then swap AC over to engines.
- We need to test the configuration of powering down such that we can do a 2-flight day. This will be tested either tomorrow.

Instruments:

Generally good; have been successfully ticking off the minor issues.

Do Not Cite!

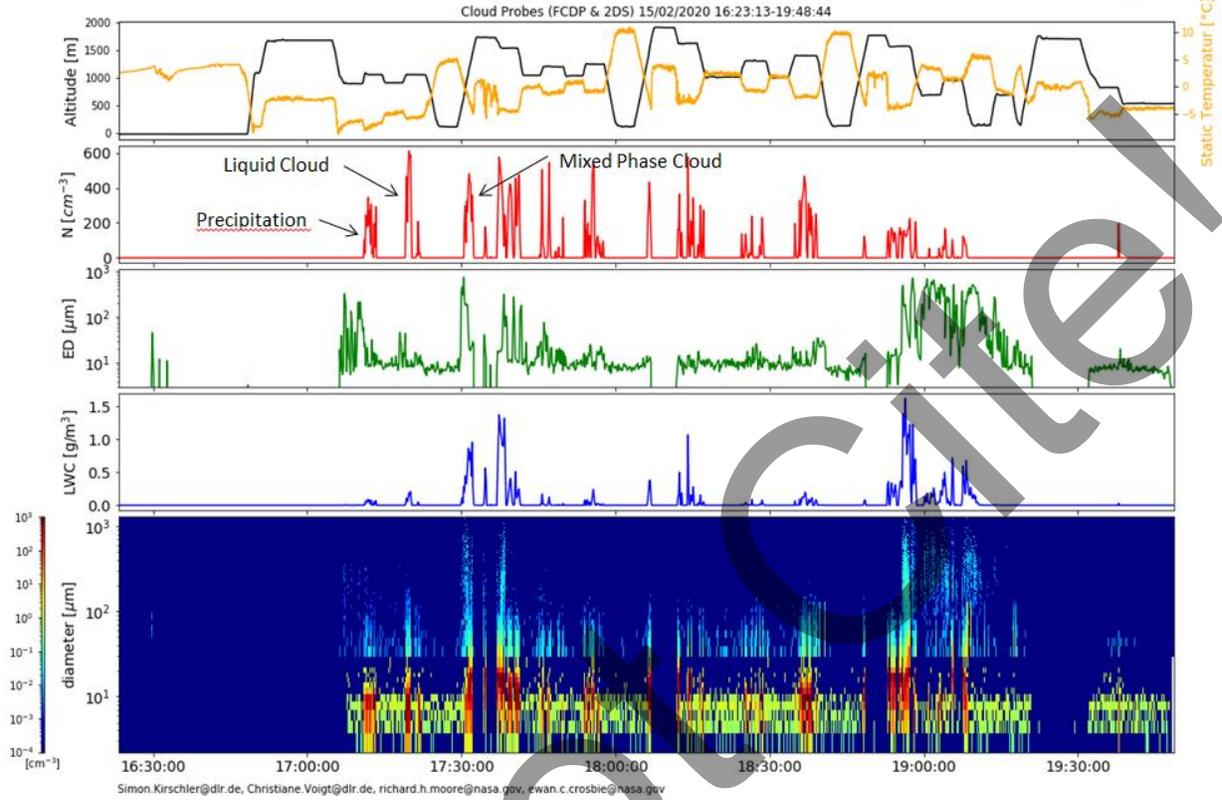
Rich Moore Quicklook Images:



Quicklook ACTIVATE Cloud Probes (FCDP & 2DS)

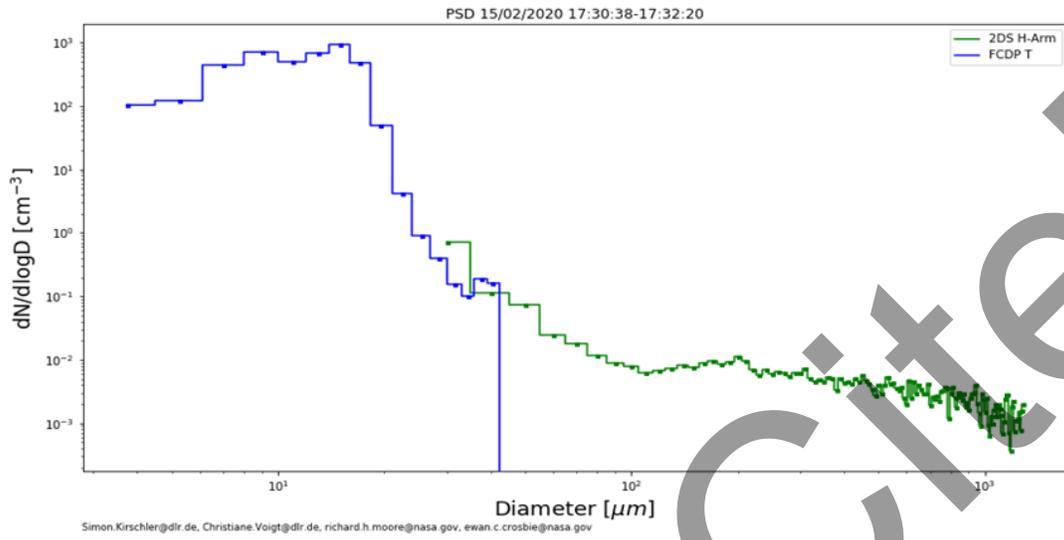
preliminary data, only for quicklook use

Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



PSD ACTIVATE

preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



Liquid Cloud: 17:19:28



Precipitation: 17:07:14



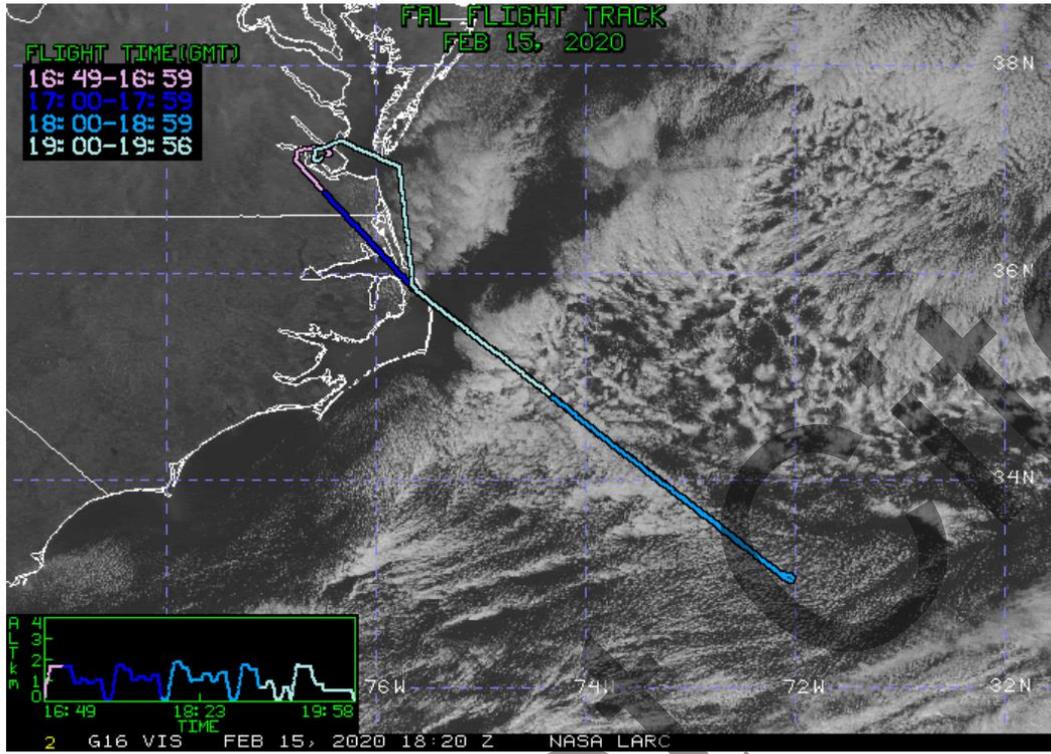
Mixed Phase Cloud: 17:30:30



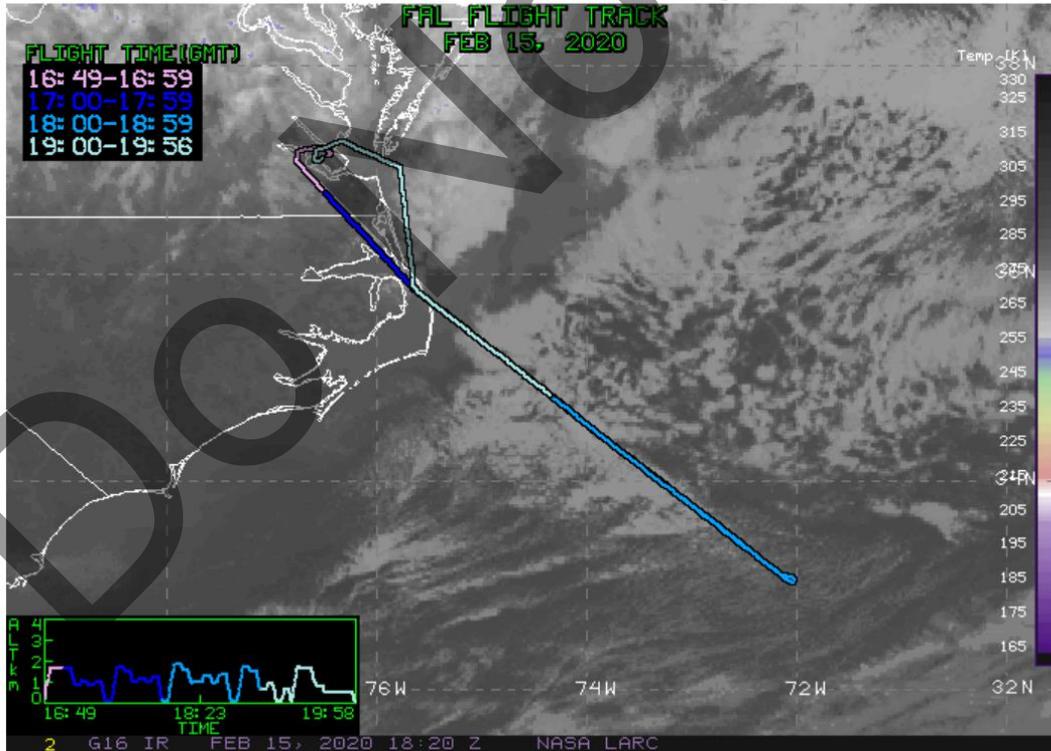
Do Not Cite!

Satellite Group Images (from Middle of Flight):

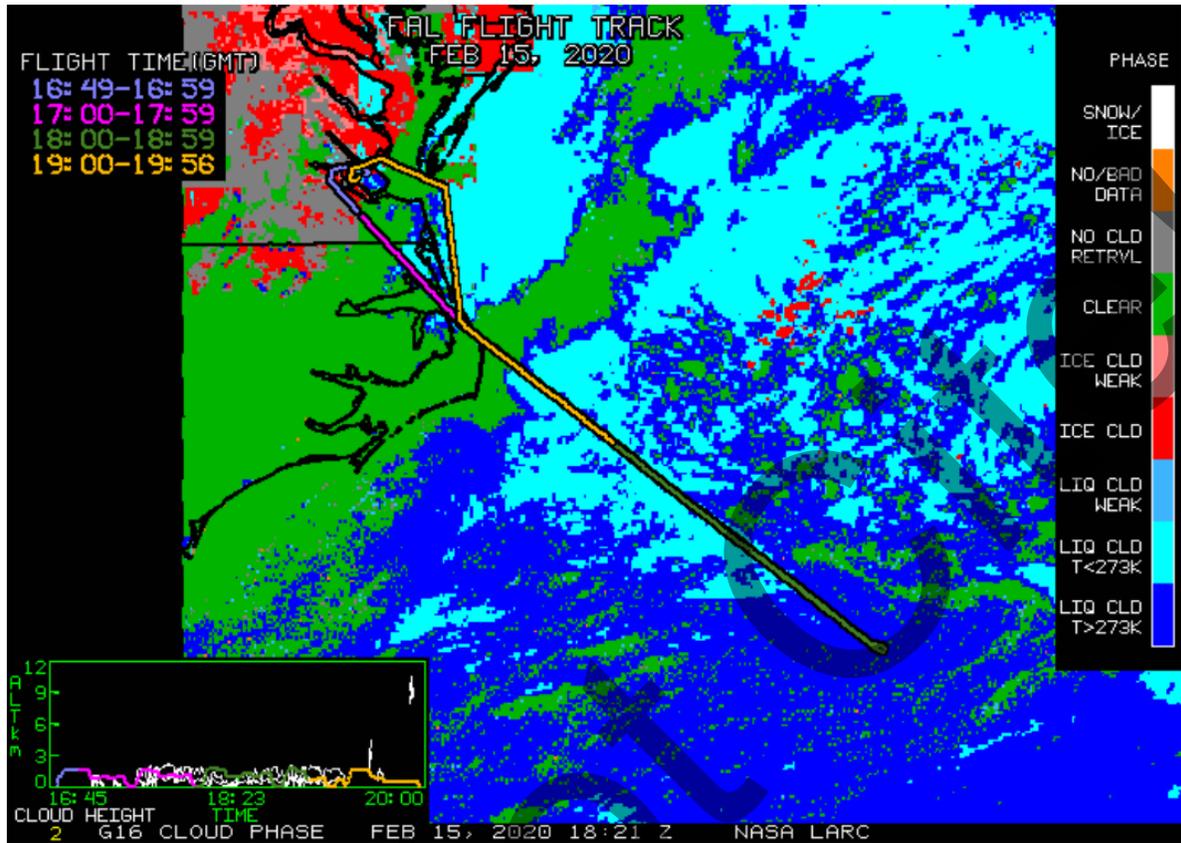
Visible



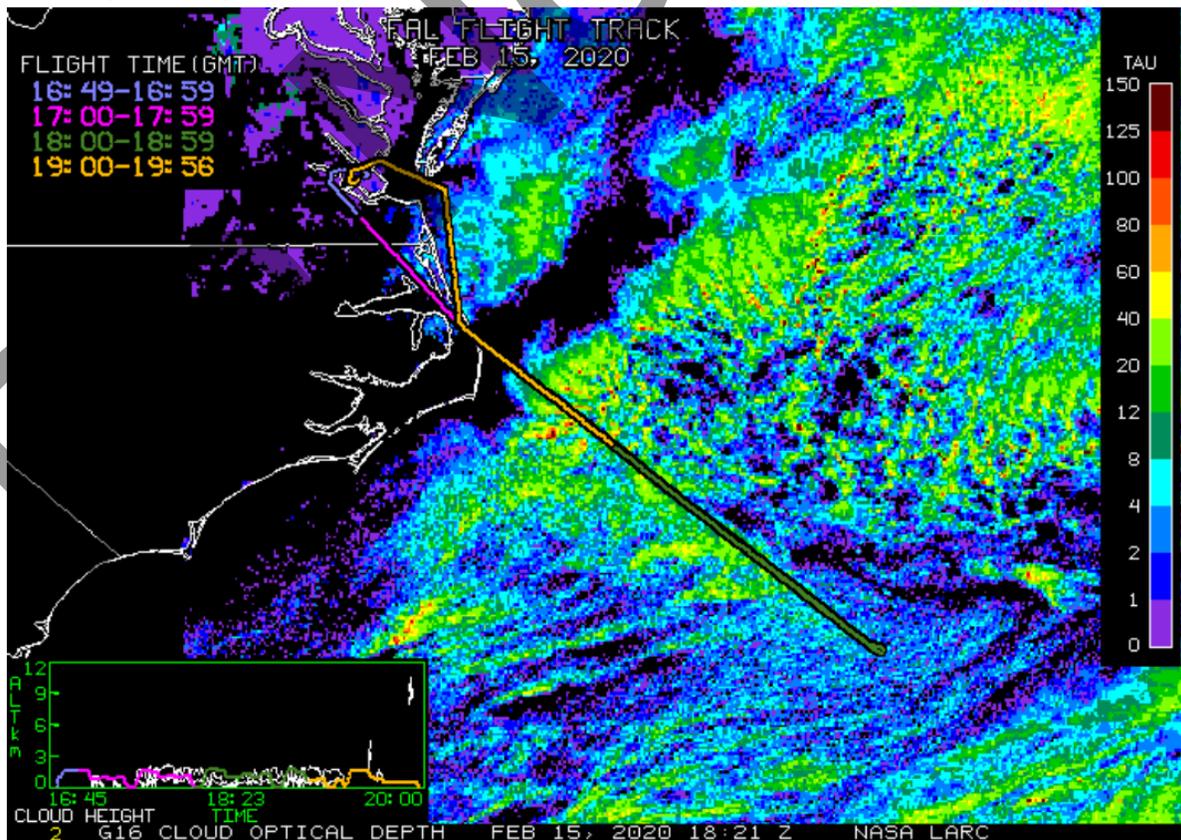
Infrared



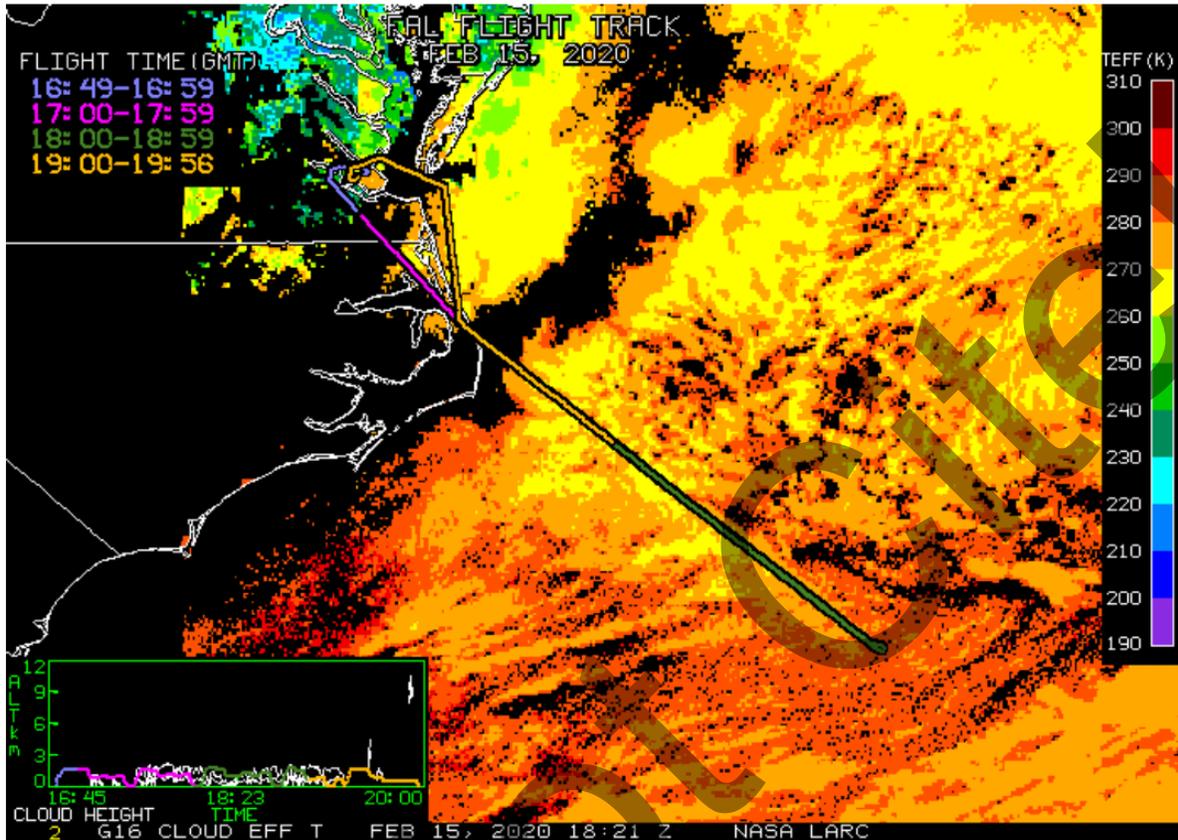
Cloud Phase



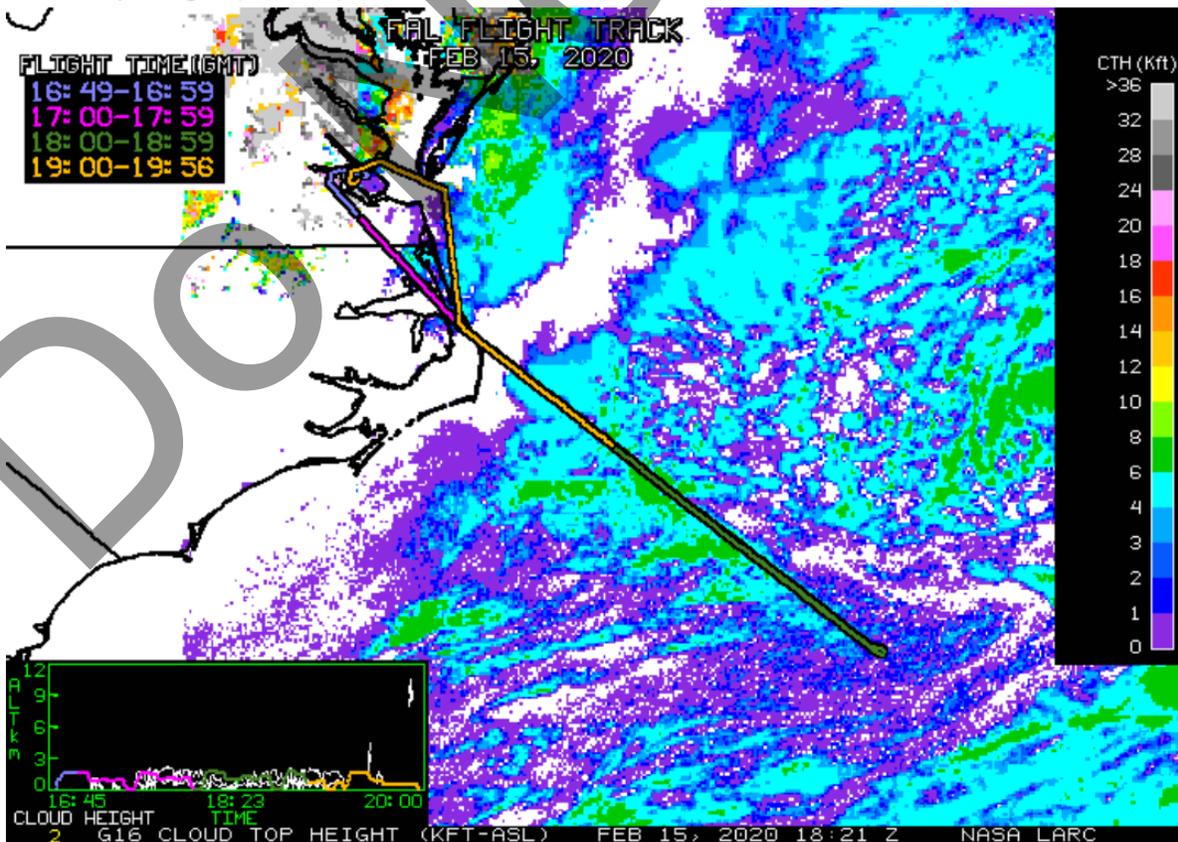
Cloud Optical Depth



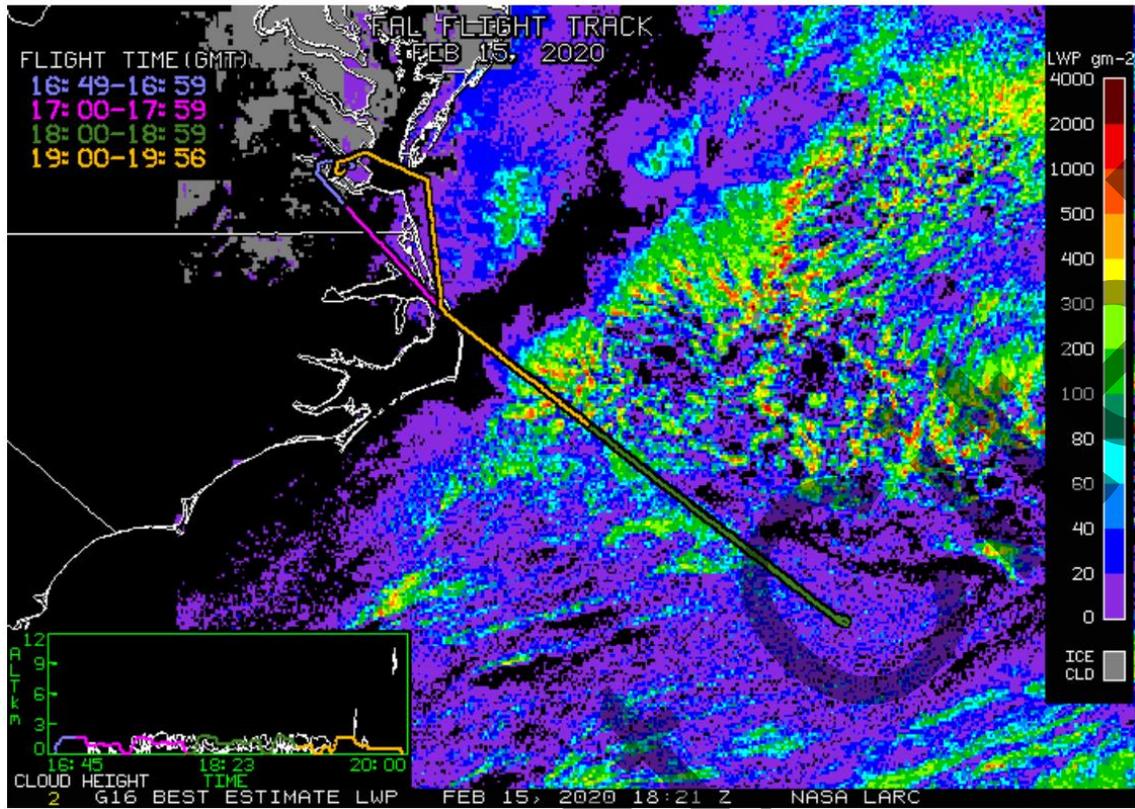
Cloud Effective Temperature (K)



Cloud-Top Height (Kft-ASL)



Liquid Water Path (gm-2)



Cloud Droplet Number Concentration (cm⁻³)

